

# Canon

## F-789SGA

Calculation Examples

Beispiele für Berechnungen

Exemples de calcul

Ejemplos de cálculo

Esempi di calcolo

Rekenvoorbeelden

Regneeksempler

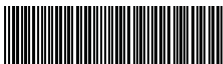
Laskentaesimerkkejä

Beräkningsexempel

Exemplos de cálculos

αραδείγματα υπολογισμών




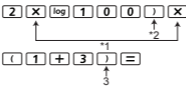

---



E-IM-2724




ENGLISH  
DEUTSCH  
FRENCH  
ESPAÑOL  
ITALIANO  
NEDERLANDS  
DANSK  
SUOMI  
SVENSKA  
PORTUGUÊS  
ΕΛΛΗΝΙΚΑ

## EX #1

Example 	Key In Operation 	Display 
Including $\times$ *1, ) *2, ) *3	$2 \times \log 100 \times (1+3)$ 	$2x\log(100) \times (1+3)$  16
Omitting $\times$ *1, ) *3	$2 \log 100 (1+3)$ 	$2\log(100)(1+3)$  16

## EX #2

LINE MODE:  Shift  SET-UP  2

Mode Setting 	Key In operation 	Display (input Line only) 
<b>Method 1:</b> Insert mode	1234567 $+$ 889900 $\leftarrow$ 7 times	12345671+889900
	<b>DEL</b> <b>0</b>	12345601+889900
<b>Method 2:</b> Overwrite mode	Shift <input type="checkbox"/> SET-UP <input type="checkbox"/> 2 1234567 $+$ 889900 Shift <input type="checkbox"/> Insert <input type="checkbox"/>	1234567+889900_
	$\leftarrow$ 8 times	1234567+889900
	<b>0</b>	1234560+889900

## EX #3

LINE MODE:  Shift  SET-UP  2

Mode Setting 	Key In operation 	Display 
Method 1: Insert mode	12times	12 34567+889900
	<input type="checkbox"/> DEL	1 34567+889900
Method 2: Overwrite mode	Shift <input type="checkbox"/> Insert <input type="checkbox"/>	1234567+889900_
	13times	1 <u>2</u> 34567+889900
	<input type="checkbox"/> DEL	1 <u>3</u> 4567+889900

## EX #4

MATHEMATICS MODE:  Shift  SET-UP  1

Mode Setting 	Key In operation 	Display 
Insert mode	6times	1234567+ 889900
	<input type="checkbox"/> 2	1234567+2 889900

## EX #5

MATHEMATICS MODE:  Shift  SET-UP  1

Example 	Key in operation 	Display 
$\left  \sqrt{3} - \frac{2}{\sqrt{2}} \right $	<input type="checkbox"/> Abs <input type="checkbox"/> $\sqrt{\square}$ <input type="checkbox"/> 3 <input type="checkbox"/> $\rightarrow$ <input type="checkbox"/> - <input type="checkbox"/> 2 <input type="checkbox"/> $\frac{\square}{\square}$ <input type="checkbox"/> $\sqrt{\square}$ <input type="checkbox"/> 2 <input type="checkbox"/> =	$\left  \sqrt{3} - \frac{2}{\sqrt{2}} \right $ $\sqrt{3} - \sqrt{2}$

**EX #6**

**Calculation Precision, Input Range /  
 Berechnung Präzision, Eingangsbereich /  
 Calcul de précision, plages des valeurs d'entrée /  
 Cálculo de precisión, Rango de entrada / Calcolo di  
 precisione, Rango de entrada / Rekenprecisie,  
 Invoerbereik / Beregning Precision, Inputområde /  
 Laskelma Precision, Syöttöalue / Beräkning Precision,  
 Inmatningsområde / Cálculo de Precisão, Limite de  
 entrada / Υπολογισμός ακριβείας, Περιοχή εισαγωγής**

<b>E</b>	Number of Digits for Internal Calculation Precision*	18 digits  ±1 at the 10th digit for a single calculation. ±1 at the least significant for exponential display
	Calculation Range	$\pm 1 \times 10^{-99}$ to $\pm 9.999999999 \times 10^{99}$ or 0
<b>D</b>	Anzahl Ziffern für die interne Berechnung Präzision*	18 Zeichen beinhalten  ±1 an der 10. Stelle bei einer einzelnen Berechnung. ±1 an der letzten signifikanten Stelle bei der Exponentialdarstellung
	Rechenbereich	$\pm 1 \times 10^{-99}$ bis $\pm 9.999999999 \times 10^{99}$ oder 0
<b>F</b>	Nombre de chiffres pour les calculs internes Précision*	18 chiffres  ±1 sur le dixième chiffre pour un calcul unique. ±1 sur le dernier chiffre significatif pour l'affichage exponentiel.
	Plage de calcul	$\pm 1 \times 10^{-99}$ à $\pm 9.999999999 \times 10^{99}$ ou 0
<b>ES</b>	Número de dígitos del cálculo interno Precisión*	18 dígitos  ±1 en el décimo dígito (en cálculos simples) ±1 en el último dígito significativo (en la visualización de exponentes).
	Intervalo de cálculo	$\pm 1 \times 10^{-99}$ to $\pm 9.999999999 \times 10^{99}$ o 0
<b>I</b>	Numero di cifre del calcolo interno Precisione*	18 cifre  ±1 alla 10a cifra per un unico calcolo. ±1 all'ultima cifra significativa in caso di visualizzazione esponenziale.
	Intervallo di calcolo	$\pm 1 \times 10^{-99}$ a $\pm 9.999999999 \times 10^{99}$ o 0

<b>NL</b> Aantal cijfers van interne berekening Precisie*	18 cijfers bewaren
Berekeningsbereik	±1 bij het tiende cijfer voor één berekening. ±1 bij het laatste significante cijfer voor de exponentiële weergave. $\pm 1 \times 10^{-99}$ tot $\pm 9.999999999 \times 10^{99}$ of 0
<b>DA</b> Antal cifre i intern udregning Præcision*	18 cifre
Udregningsområde	±1 ved det 10. Ciffer for en enkelt beregning. ±1 ved sidste signifikante ciffer ved eksponentiel visning. $\pm 1 \times 10^{-99}$ til $\pm 9.999999999 \times 10^{99}$ eller 0
<b>FI</b> Sisäisen laskutoimituksen numeroiden lukumäärä Tarkkuus*	18 numeroa
Laskenta-alue	±1 yksittäisessä laskussa 10. Numerolla. ±1 viimeisessä merkitsevässä numerossa eksponentiaalinäytössä. $\pm 1 \times 10^{-99}$ to $\pm 9.999999999 \times 10^{99}$ tai 0
<b>SE</b> Antal siffror i intern beräkning Precision*	18 siffror
Beräkningsområde	±1 vid den 10:e siffran för en enstaka beräkning. ±1 är den sista signifikanta siffran för exponentiell visning. $\pm 1 \times 10^{-99}$ to $\pm 9.999999999 \times 10^{99}$ eller 0
<b>PT</b> Número de dígitos de cálculo interno Precisão*	18 dígitos
Intervalo de cálculo	±1 no 10º dígito para um cálculo único. ±1 no último dígito significativo para o ecrã. $\pm 1 \times 10^{-99}$ a $\pm 9.999999999 \times 10^{99}$ ou 0
<b>Ελ</b> Αριθμός ψηφίων για εσωτερικό υπολογισμό Ακρίβεια*	18 ψηφίο
Εύρος τιμών υπολογισμού	1 στο 10ο ψηφίο για έναν υπολογισμό. 1 στο τελευταίο σημαντικό ψηφίο, για τηνεκθετική προβολή. $1 \times 10^{-99}$ έως $9.999999999 \times 10^{99}$

**Input Ranges / Eingangsbereich / Plages des valeurs d'entrée / Rango de entrada / Rango de entrada / Invoerbereik / Inputområde / Syöttöalue / Inmatningsområde / Limite de entrada / Περιοχή εισαγωγής**

Functions	Input Range	
sinx	DEG	$0 \leq  x  < 9 \times 10^9$
	RAD	$0 \leq  x  < 157\,079\,632.7$
	GRA	$0 \leq  x  < 1 \times 10^{10}$
cosx	DEG	$0 \leq  x  < 9 \times 10^9$
	RAD	$0 \leq  x  < 157\,079\,632.7$
	GRA	$0 \leq  x  < 1 \times 10^{10}$
tanx	DEG	Same as sinx, except when $ x  = (2n-1) \times 90$
	RAD	Same as sinx, except when $ x  = (2n-1) \times \pi/2$
	GRA	Same as sinx, except when $ x  = (2n-1) \times 100$
sin <sup>-1</sup> x	$0 \leq  x  \leq 1$	
cos <sup>-1</sup> x		
tan <sup>-1</sup> x	$0 \leq  x  \leq 9.999\,999\,999 \times 10^{99}$	
sinhx	$0 \leq  x  \leq 230\,258\,509\,2$	
coshx		
sinh <sup>-1</sup> x	$0 \leq  x  \leq 4.999\,999\,999 \times 10^{99}$	
cosh <sup>-1</sup> x	$1 \leq x \leq 4.999\,999\,999 \times 10^{99}$	
tanhx	$0 \leq  x  \leq 9.999\,999\,999 \times 10^{99}$	
tanh <sup>-1</sup> x	$0 \leq  x  \leq 9.999\,999\,999 \times 10^{-1}$	
logx/lnx	$0 < x \leq 9.999\,999\,999 \times 10^{99}$	
10 <sup>x</sup>	$-9.999\,999\,999 \times 10^{99} \leq x \leq 99.999\,999\,99$	
e <sup>x</sup>	$-9.999\,999\,999 \times 10^{99} \leq x \leq 230.258\,509\,2$	
$\sqrt{x}$	$0 \leq x < 1 \times 10^{100}$	
x <sup>2</sup>	$ x  < 1 \times 10^{50}$	
x <sup>3</sup>	$ x  \leq 2.154\,434\,69 \times 10^{33}$	
x <sup>-1</sup>	$ x  < 1 \times 10^{100}, x \neq 0$	
$\sqrt[3]{x}$	$ x  < 1 \times 10^{100}$	
x!	$0 \leq x \leq 69$ (x is an integer)	

Functions	Input Range
nPr	$0 \leq n < 1 \times 10^{10}$ , $0 \leq r \leq n$ (n,r are integers)
	$1 \leq \{n!/((n-r)!\} < 1 \times 10^{100}$
nCr	$0 \leq n < 1 \times 10^{10}$ , $0 \leq r \leq n$ (n,r are integers)
	$1 \leq n!/r! < 1 \times 10^{100}$ or $1 \leq n!/((n-r)! < 1 \times 10^{100}$
Pol(x,y)	$ x ,  y  \leq 9.999\ 999\ 999 \times 10^{99}$ $\sqrt{x^2+y^2} \leq 9.999\ 999\ 999 \times 10^{99}$
Rec(r,θ)	$0 \leq r \leq 9.999\ 999\ 999 \times 10^{99}$ θ : Same as sinx
◦ ◡ "	$ a , b, c < 1 \times 10^{100}$ $0 \leq b, c$ The display seconds value is subject to an error of +/-1 at the second decimal place
	$ x  < 1 \times 10^{100}$ ◀ ◦ ◡ " Deciaml ↔ Sexagesimal Conversions $0^\circ 0' 0'' \leq  x  \leq 99999999^\circ 59' 59''$
$^{(x^y)}$	$x > 0$ : $-1 \times 10^{100} < y \log x < 100$ $x = 0$ : $y > 0$ $x < 0$ : $y = n, m / (2n+1)$ (m,n are integers) However: $-1 \times 10^{100} < y \log  x  < 100$
$x \sqrt{y}$	$y > 0$ : $x \neq 0$ , $-1 \times 10^{100} < 1/x \log y < 100$ $y = 0$ : $x > 0$ $y < 0$ : $x = 2n+1, (2n+1)/m$ ( $m \neq 0$ ; m,n are integers)
a b/c	Total of integer, numerator, and denominator must be 10 digits or less (including division marks).
i-Rand(a,b)	$0 \leq a < 1 \times 10^{10}$ , $0 \leq b < 1 \times 10^{10}$ (a,b should be positive integers or 0)
Rand	Result generates a 3 digits pseudo random number(0.000~0.999)
LCM(x,y,z)	$0 < x, y, z \leq 9.999\ 999\ 999 \times 10^{12}$ (positive integers) Default result when x, y, z=0
GCD(x,y,z)	$0 < x, y, z \leq 9.999\ 999\ 999 \times 10^{12}$ (positive integers) Default result when x, y, z=0

Functions	Input Range
Q...r(x,y)	$0 < x, y \leq 9.999\ 999\ 999 \times 10^{12}$ (positive integers) $0 \leq Q \leq 999\ 999\ 9999$ , $0 \leq r \leq 999\ 999\ 9999$ (Q,r are integers) Default result when $x=0$
Mod(x,y)	$0 <  x, y  \leq 9.999999999 \times 10^{12}$ Default result= $x$ when $y=0$
Single-variable	$ x  < 1 \times 10^{100}$ $ FREQ  < 1 \times 10^{100}$
Paired-variable	$ x  < 1 \times 10^{100}$ $ y  < 1 \times 10^{100}$ $ FREQ  < 1 \times 10^{100}$
ABS	$ x  < 1 \times 10^{100}$
Pfact	$x \leq 9999999999$ (positive integers)
BIN	Positive: 0~0111 1111 1111 1111 1111 1111 1111 1111 Negative: 1000 0000 0000 0000 0000 0000 0000 0000~ 1111 1111 1111 1111 1111 1111 1111 1111
DEC	Positive: 0~2147483647 Negative: -2147483648~-1
OCT	Positive: 0~177 7777 7777 Negative: 200 0000 0000~377 7777 7777
HEX	Positive: 0~7FFF FFFF Negative: 8000 0000~FFFF FFFF
$\sum (f(x), a, b)$	$a$ and $b$ are integers in the range of $-1 \cdot 10^{10} < a \leq b < 1 \cdot 10^{10}$ .
$\prod (f(x), a, b)$	$a$ and $b$ are integers in the range of $-1 \cdot 10^{10} < a \leq b < 1 \cdot 10^{10}$ .






## EX #7

1st Priority	Recall memory (A, B, C, D, E, F, 0-9), Rand
2nd	Calculation within parentheses ( ).
3rd	Function with parenthesis that request the input argument to the right Pol(, Rec(, d/dx, $\int dx$ , P(, Q(, R(, Det(, Trn(, Ide(, Adj(, Inv(, Arg(, Conjg(, Real(, Imag(, sin(, cos(, tan(, $\sin^{-1}$ (, $\cos^{-1}$ (, $\tan^{-1}$ (, sinh(, cosh(, tanh(, $\sinh^{-1}$ (, $\cosh^{-1}$ (, $\tanh^{-1}$ (, log(, ln(, $e^{\wedge}$ (, $10^{\wedge}$ (, $\sqrt{\wedge}$ (, $\sqrt[3]{\wedge}$ (, Abs(, ROUND(, LCM(, GCD(, Q...r(, i~Rand(,
4th	Functions that come after the input value preceded by values, powers, power roots: $x^2$ , $x^3$ , $x^{-1}$ , $x!$ , $^{\circ}$ , $^{\circ}$ , $^{\circ}$ , r, g, $^{\wedge}$ (, $\sqrt{\wedge}$ (, Percent %, $\log_a b$ , EXP, $\blacktriangleright$
5th	Fractions: a b/c, d/c
6th	Prefix symbol: (-) (negative sign), base-n symbols (d, h, b, o, Neg, Not)
7th	Statistical estimated value calculation: $\hat{x}$ , $\hat{y}$ , $\hat{x}1$ , $\hat{x}2$ Metric conversion commands (cm $\rightarrow$ in, etc)
8th	Multiplication where sign is omitted: Multiplication sign omitted immediately before $\pi$ , e, variables ( $2\pi$ , $5A$ , $\pi A$ , etc.), functions with parentheses ( $2\sqrt{(3)}$ , $Asin(30)$ , etc.)
9th	Permutations, combinations: $nPr$ , $nCr$ Complex number polar coordinate symbol (<)
10th	Dot: .
11th	Multiplication and division: $\times$ , $\div$
12th	Addition and subtraction: +, -
13th	Logical AND (and)
14th	Logical OR, XOR, XNOR (or, xor, xnor)
15th	Calculation ending instruction: =, M+, M- STO (store memory), $\blacktriangleright r < \theta$ , $\blacktriangleright a+bi$




## EX #8

MATHEMATICS MODE:   **1**

Example 	Key in operation 	Display 
$(-2.5)^2$	( <b>(-)</b> <b>2</b> <b>.</b> <b>5</b> <b>)</b> <b>x<sup>2</sup></b> <b>=</b>	$(-2.5)^2$ $\frac{25}{4}$
$(4 \times 10^{75})(-2 \times 10^{-79})$	<b>4</b> <b>EXP</b> <b>7</b> <b>5</b> <b>x</b> <b>(-)</b> <b>2</b> <b>EXP</b> <b>(-)</b> <b>7</b> <b>=</b> <b>9</b> <b>=</b>	$4E75x$ $-\frac{1}{1250}$

## EX #9

MATHEMATICS MODE:   **1**

Example 	Key in operation 	Display 
$23 + 7 \rightarrow A$	<b>2</b> <b>3</b> <b>+</b> <b>7</b> <b>Shift</b> <b>STO</b> <b>A</b>	$23+7 \rightarrow A$ 30
$2 \times \sin A = 1$	<b>2</b> <b>sin</b> <b>Alpha</b> <b>A</b> <b>=</b>	$2\sin(A)$ 1
Clear memory	<b>0</b> <b>Shift</b> <b>STO</b> <b>A</b>	$0 \rightarrow A$ 0

## EX #10

MATHEMATICS MODE:  Shift  SET-UP  1

Example 	Key in operation 	Display 
$123 + 456 \rightarrow M+$ $Ans^2 = 335,241$	$\boxed{1} \boxed{2} \boxed{3} \boxed{+} \boxed{4}$ $\boxed{5} \boxed{6} \boxed{M+} \boxed{x^2} \boxed{=}$	$Ans^2$ $335241$
$789900 - Ans =$ $454,659$	$\boxed{7} \boxed{8} \boxed{9} \boxed{9} \boxed{0}$ $\boxed{0} \boxed{-} \boxed{Ans} \boxed{=}$	$789900-Ans$ $454659$








## EX #11

MATHEMATICS MODE:  Shift  SET-UP  1

Example 	Key in operation 	Display 
$1\frac{1}{2} + \frac{5}{6} = \frac{7}{3}$	$\boxed{1} \boxed{Shift} \boxed{\frac{a}{b}} \boxed{1} \boxed{\rightarrow}$ $\boxed{2} \boxed{\rightarrow} \boxed{+} \boxed{5} \boxed{\frac{a}{b}}$ $\boxed{6} \boxed{=}$	$1\frac{1}{2} + \frac{5}{6}$ $\frac{7}{3}$
$\frac{7}{3} \leftrightarrow 2.333333333$ (Fraction $\leftrightarrow$ Decimal)	$\boxed{F \rightarrow D}$	$1\frac{1}{2} + \frac{5}{6}$ $2.333333333$
$2.333333333 \leftrightarrow 2\frac{1}{3}$ (Decimal $\leftrightarrow$ Mixed Fraction)	$\boxed{Shift} \boxed{a \ b/c \ d/e}$	$1\frac{1}{2} + \frac{5}{6}$ $2\frac{1}{3}$










## EX #12

MATHEMATICS MODE:   **1**

Example 	Key in operation 	Display 
To calculate 25% of 820	<b>8</b> <b>2</b> <b>0</b> <b>×</b> <b>2</b> <b>5</b>   <b>=</b>	820x25% 205
The percentage of 750 against 1250	<b>7</b> <b>5</b> <b>0</b> <b>÷</b> <b>1</b> <b>2</b> <b>5</b> <b>0</b>   <b>=</b>	750÷1250% 60

## EX #13

MATHEMATICS MODE:   **1**

Example 	Key in operation 	Display 
$86^{\circ}37'34.2'' \div 0.7 = 123^{\circ}45'6''$	<b>8</b> <b>6</b>  <b>3</b> <b>7</b>  <b>3</b> <b>4</b> <b>.</b> <b>2</b>   <b>0</b> <b>.</b> <b>7</b> <b>=</b>	$86^{\circ}37'34.2'' \div 0.7$  $123^{\circ}45'6''$
$123^{\circ}45'6'' \rightarrow 123.7516667$		$86^{\circ}37'34.2'' \div 0.7$ $123.7516667$
$2.3456 \rightarrow 2^{\circ}20'44.16''$	<b>2</b> <b>.</b> <b>3</b> <b>4</b> <b>5</b> <b>6</b> <b>=</b> 	2.3456 $2^{\circ}20'44.16''$

# EX #14

MATHEMATICS MODE: **1**

Example 	Key in operation 	Display 
$1 \times 12 = 12$ $2 + 25 = 27$ using a multi-statement	$\boxed{1} \boxed{\times} \boxed{1} \boxed{2} \text{Alpha}$ $\boxed{\div} \boxed{2} \boxed{+} \boxed{2} \boxed{5}$	$1 \times 12 : 2 + 25  $
	$\boxed{=}$	$1 \times 12$ ▲ Disp 12
	$\boxed{=}$	$2 + 25$ ▲ 27
Replay the previous calculation history ( $1 \times 12 = 12$ )	$\boxed{\blacktriangle}$	$1 \times 12$ ▼ 12

# EX #15

MATHEMATICS MODE: **1**

Key in Operation 	Display 
$\text{Shift}$ $\text{C-Value}$ $\boxed{\text{C}} \boxed{\text{C-Value}}$ (menu selection page)	Input 1-79 <u>0.0</u> ◀ mP   mn   me   mμ   ao ▶
$\boxed{3} \boxed{5} \boxed{=}$	g
$\boxed{+} \boxed{35} \boxed{=}$	$g+35$ 44.80665
$\boxed{=} \boxed{=} \boxed{\times} \boxed{50} \boxed{=}$	Ansx50 2240.3325

# EX #16

NO.	Constant	Symbol	Value	Unit
1.	Proton mass	$m_p$	$1.672621777 \times 10^{-27}$	kg
2.	Neutron mass	$m_n$	$1.674927351 \times 10^{-27}$	kg
3.	Electron mass	$m_e$	$9.10938291 \times 10^{-31}$	kg
4.	Muon mass	$m_\mu$	$1.883531475 \times 10^{-28}$	kg
5.	Bohr radius $a_0 / 4\pi R_\infty$	$a_0$	$0.52917721092 \times 10^{-10}$	m
6.	Planck constant	$h$	$6.62606957 \times 10^{-34}$	J s
7.	Nuclear magneton $e\hbar / 2m_p$	$\mu_N$	$5.05078353 \times 10^{-27}$	J T <sup>-1</sup>
8.	Bohr magneton $e\hbar / 2m_e$	$\mu_B$	$927.400968 \times 10^{-26}$	J T <sup>-1</sup>
9.	$h / 2\pi$	$\hbar$	$1.054571726 \times 10^{-34}$	J s
10.	Fine-structure constant $e^2 / 4\pi\epsilon_0 \hbar c$	$\alpha$	$7.2973525698 \times 10^{-3}$	
11.	Classical electron radius $\alpha^2 a_0$	$r_e$	$2.8179403267 \times 10^{-15}$	m
12.	Compton wavelength $h / m_e c$	$\lambda_c$	$2.4263102389 \times 10^{-12}$	m
13.	Proton gyromagnetic ratio $2\mu_p / \hbar$	$\gamma_p$	$2.675222005 \times 10^8$	s <sup>-1</sup> T <sup>-1</sup>
14.	Proton Compton wavelength $h / m_p c$	$\lambda_{c,p}$	$1.32140985623 \times 10^{-15}$	m
15.	Neutron Compton wavelength $h / m_n c$	$\lambda_{c,n}$	$1.3195909068 \times 10^{-15}$	m
16.	Rydberg constant $\alpha^2 m_e c / 2\hbar$	$R_\infty$	10973731.568539	m <sup>-1</sup>
17.	(unified) atomic mass unit	$u$	$1.660538921 \times 10^{-27}$	kg
18.	Proton magnetic moment	$\mu_p$	$1.410606743 \times 10^{-26}$	J T <sup>-1</sup>
19.	Electron magnetic moment	$\mu_e$	$-928.476430 \times 10^{-26}$	J T <sup>-1</sup>
20.	Neutron magnetic moment	$\mu_n$	$-0.96623647 \times 10^{-26}$	J T <sup>-1</sup>
21.	Muon magnetic moment	$\mu_\mu$	$-4.49044807 \times 10^{-26}$	J T <sup>-1</sup>
22.	Faraday constant $N_A e$	$F$	96485.3365	C mol <sup>-1</sup>
23.	Elementary charge	$e$	$1.602176565 \times 10^{-19}$	C
24.	Avogadro constant	$N_A$	$6.02214129 \times 10^{23}$	mol <sup>-1</sup>
25.	Boltzmann constant $R / N_A$	$k$	$1.3806488 \times 10^{-23}$	J K <sup>-1</sup>
26.	Molar volume of ideal gas $RT / p$ $T=273.15$ K, $p=101.325$ kPa	$V_m$	$22.413968 \times 10^{-3}$	m <sup>3</sup> mol <sup>-1</sup>
27.	Molar gas constant	$R$	8.3144621	J mol <sup>-1</sup> K <sup>-1</sup>
28.	Speed of light in vacuum	$c_0$	299792458	m s <sup>-1</sup>
29.	First radiation constant $2\pi^5 / 15c^2$	$c_1$	$3.74177153 \times 10^{-16}$	W m <sup>2</sup>
30.	Second radiation constant $hc/k$	$c_2$	$1.4387770 \times 10^{-2}$	m K

NO.	Constant	Symbol	Value	Unit
31.	Stefan-Boltzmann constant	$\sigma$	$5.670373 \times 10^{-8}$	$W m^{-2} K^{-4}$
32.	Electric constant $1 / \mu_0 c^2$	$\epsilon_0$	$8.854187817 \times 10^{-12}$	$F m^{-1}$
33.	Magnetic constant	$\mu_0$	$12.566370614 \times 10^{-7}$	$N A^{-2}$
34.	Magnetic flux quantum $h / 2e$	$\Phi_0$	$2.067833758 \times 10^{-15}$	Wb
35.	Standard acceleration of gravity	g	9.80665	$ms^{-2}$
36.	Conductance quantum $2e^2/h$	$G_0$	$7.7480917346 \times 10^{-5}$	S
37.	Characteristic impedance of vacuum $\sqrt{\mu_0} / \epsilon_0 = \mu_0 c$	$Z_0$	376.730313461	$\Omega$
38.	Celsius temperature	t	273.15	
39.	Newtonian constant of gravitation	G	$6.67384 \times 10^{-11}$	$m^3 kg^{-1} s^{-2}$
40.	Standard atmosphere	atm	101325	Pa
41.	Proton g-factor $2 \mu_p / \mu_N$	$g_p$	5.585694713	
42.	$\lambda_{c,n} / 2\pi$	$\tilde{\lambda}_{c,n}$	$0.21001941568 \times 10^{-15}$	m
43.	Planck length $\hbar / m_p c = (\hbar G / c^3)^{1/2}$	$l_p$	$1.616199 \times 10^{-35}$	m
44.	Planck time $l_p / c = (\hbar G / c^5)^{1/2}$	$t_p$	$5.39106 \times 10^{-44}$	s
45.	Planck mass $(\hbar c / G)^{1/2}$	$m_p$	$2.17651 \times 10^{-8}$	kg
46.	Atomic mass constant	$m_u$	$1.660538921 \times 10^{-27}$	kg
47.	Electron volt: $(e/c) J$	eV	$1.602176565 \times 10^{-19}$	J
48.	Molar planck constant	$N_A h$	$3.9903127176 \times 10^{-10}$	$J s mol^{-1}$
49.	Wien displacement law constant	b	$2.8977721 \times 10^{-3}$	m K
50.	Lattice parameter of Si (in vacuum, 22.5°C)	a	$543.1020504 \times 10^{-12}$	m
51.	Hartree energy $e^2 / 4 \pi \epsilon_0 a_0$	Eh	$4.35974434 \times 10^{-18}$	J
52.	Loschmidt constant $N_A / V_m$	$n_0$	$2.6867805 \times 10^{25}$	$m^{-3}$
53.	Inverse of conductance quantum	$G_0^{-1}$	12906.4037217	$\Omega$
54.	Josephson constant $2e/h$	$K_J$	$483597.870 \times 10^9$	$Hz V^{-1}$
55.	Von Klitzing constant $h/e^2$	$R_K$	25812.8074434	$\Omega$
56.	$\lambda_c / 2\pi$	$\tilde{\lambda}_c$	$386.15926800 \times 10^{-15}$	m
57.	Thomson cross section $(8 \pi / 3) r_e^2$	$\sigma_e$	$0.6652458734 \times 10^{-28}$	$m^2$
58.	Electron magnetic moment anomaly $ \mu_e  / \mu_B - 1$	$a_e$	$1.15965218076 \times 10^{-3}$	
59.	Electron g-factor $-2(1 + a_e)$	$g_e$	-2.00231930436153	
60.	Electron gyromagnetic ratio $2 \mu_e  / \hbar$	$\gamma_e$	$1.760859708 \times 10^{11}$	$s^{-1} T^{-1}$
61.	Muon magnetic moment anomaly	$a_\mu$	$1.16592091 \times 10^{-3}$	
62.	Muon g-factor $-2(1 + a_\mu)$	$g_\mu$	-2.0023318418	

NO.	Constant	Symbol	Value	Unit
63.	Muon Compton wavelength $h / m_{\mu}c$	$\lambda_{c,\mu}$	$11.73444103 \times 10^{-15}$	m
64.	$\lambda_{c,\mu} / 2\pi$	$\tilde{\lambda}_{c,\mu}$	$1.867594294 \times 10^{-15}$	m
65.	Tau Compton wavelength $h / m_{\tau}c$	$\lambda_{c,\tau}$	$0.697787 \times 10^{-15}$	m
66.	$\lambda_{c,\tau} / 2\pi$	$\tilde{\lambda}_{c,\tau}$	$0.111056 \times 10^{-15}$	m
67.	Tau mass	$m_{\tau}$	$3.16747 \times 10^{-27}$	kg
68.	$\lambda_{c,p} / 2\pi$	$\tilde{\lambda}_{c,p}$	$0.21030891047 \times 10^{-15}$	m
69.	Shielded proton magnetic moment ( $H_2O$ , sphere, $25^{\circ}C$ )	$\mu'_p$	$1.410570499 \times 10^{-26}$	$J T^{-1}$
70.	Neutron g-factor $2 \mu_n / \mu_N$	$g_n$	-3.82608545	
71.	Neutron gyromagnetic ratio $2 \mu_n  / \hbar$	$\gamma_n$	$1.83247179 \times 10^8$	$s^{-1} T^{-1}$
72.	Deuteron mass	$m_d$	$3.34358348 \times 10^{-27}$	kg
73.	Deuteron magnetic moment	$\mu_d$	$0.433073489 \times 10^{-26}$	$J T^{-1}$
74.	Helion mass	$m_h$	$5.00641234 \times 10^{-27}$	kg
75.	Shielded helion magnetic moment (gas, sphere, $25^{\circ}C$ )	$\mu'_h$	$-1.074553044 \times 10^{-26}$	$J T^{-1}$
76.	Shielded helion gyromagnetic ratio $2 \mu'_h  / \hbar$ (gas, sphere, $25^{\circ}C$ )	$\gamma'_h$	$2.037894659 \times 10^8$	$s^{-1} T^{-1}$
77.	Alpha particle mass	$m_{\alpha}$	$6.64465675 \times 10^{-27}$	kg
78.	Shielded proton gyromagnetic ratio $2\mu'_p / \hbar$ ( $H_2O$ , sphere, $25^{\circ}C$ )	$\gamma'_p$	$2.675153268 \times 10^8$	$s^{-1} T^{-1}$
79.	Proton magnetic shielding correction $1 - \mu'_p / \mu_p$ ( $H_2O$ , sphere, $25^{\circ}C$ )	$\sigma'_p$	$25.694 \times 10^{-6}$	

! Constant values cannot perform rounding. / Konstante Werte kann keine Rundung. / Les valeurs constantes ne peuvent pas effectuer d'arrondi. / Los valores constantes no se puede realizar el redondeo. / Valori costanti non può eseguire arrotondamenti. / Constante waarden kunnen niet worden uitgevoerd afronding. / Konstante værdier kan ikke udføre afrunding. / Nykyarvoina ei tehdä eroja. / Konstanta värden kan inte utföra avrundning. / Valores constantes não podem executar o arredondamento. / Σταθερή αξία δεν μπορεί να εκτελέσει τη στρογγυλοποίηση.

**Source:** CODATA Internationally 2010 / **Quelle:** CODATA Internationally 2010 / **Source:** Conférence internationale CODATA 2010 / **Fuente:** CODATA Internationally 2010 / **Fonte:** CODATA Internationally 2010 / **Bron:** CODATA Internationaal 2010 / **Kilde:** CODATA Internationally 2010 / **Lähde:** CODATA International 2010 / **Källa:** CODATA Internationally 2010 / **Fonte:** CODATA Internationally 2010 / **Πηγή:** CODATA Internationally 2010

<http://physics.nist.gov/constants>



**EX #17**

Page	Symbol	Unit
1	feet	feet
1	m	meter
1	mil	milliliter
1	mm	millimeter
1	in	inch
1	cm	centimeter
1	yd	yard
1	mile	mile
1	km	kilometer
2	ft <sup>2</sup>	square foot
2	yd <sup>2</sup>	square yard
2	m <sup>2</sup>	square meter
2	mile <sup>2</sup>	square mile
2	km <sup>2</sup>	square kilometer
2	hectares	hectare
2	acres	acre
3	°F	degree Fahrenheit
3	°C	degree Celsius
4	gal	gallon (U.K.)
4	liter	liter
4	B.gal	gallon (U.S.)
4	pint	pint
4	fl.oz	fluid ounces (U.S.)
5	Tr.oz	ounce (troy or apothecary)
5	oz	ounces
5	lb	libra
5	Kg	kilogram
5	g	gram
6	J	joule
6	cal.f	calorie
7	atm	standard atmosphere
7	Kpa	kilopascal
7	mmHg	millimeter of mercury
7	cmH <sub>2</sub> O	centimeter of water
8	m/s	Meter per second
8	km/h	Kilometer per hour



## EX #20

MATHEMATICS MODE: **1**

Example 	Key in operation 	Display 
$e^{-3} + 10^{1.2} + \ln 3 = 16.99733128$	Shift $e^x$ <b>(-)</b> <b>3</b> <b>→</b> + Shift $10^x$ <b>1</b> <b>•</b> <b>2</b> <b>→</b> + <b>ln</b> <b>3</b> <b>=</b>	$e^{-3} + 10^{1.2} + \ln(3)$  16.99733128
$\log_3 81 - \log 1 = 4$	Alpha $\log_{\square}$ <b>3</b> <b>→</b> <b>8</b> <b>1</b> <b>→</b> <b>-</b> <b>log</b> <b>1</b> <b>=</b>	$\log_3(81) - \log(1)$  4

## EX #21

MATHEMATICS MODE: **1**




Example 	Key in operation 	Display 
Convert 180 degree into radian and gradient ( $180^\circ = \pi \text{ Rad} = 200^{\text{Gad}}$ )	Shift <b>4</b> <b>1</b> <b>8</b> <b>0</b> Shift <b>DRG</b> <b>→</b> <b>1</b> <b>=</b>	$180^\circ$ <b>R</b>  $\pi$
	Shift <b>5</b> <b>=</b>	$180^\circ$  200

## EX #22




MATHEMATICS MODE: **1**

Example 	Key in operation 	Display 
Degree Mode	Shift <b>3</b>	<b>D</b>
$\sin 60 = \frac{\sqrt{3}}{2}$	<b>sin</b> <b>6</b> <b>0</b> <b>=</b>	$\sin(60)$ $\frac{\sqrt{3}}{2}$
$\frac{1}{\sin 45^\circ} = \text{Cosec } 45^\circ = \sqrt{2}$	<b>sin</b> <b>4</b> <b>5</b> <b>)</b> <b>x<sup>-1</sup></b> <b>=</b>	$\sin(45)^{-1}$  $\sqrt{2}$




**EX #23**
**MATHEMATICS MODE:**  Shift  SET-UP  1

Example 	Key in operation 	Display 
$\sinh 2.5 - \cosh 2.5$ $= -0.082084998$	hyp <b>1</b> <b>2</b> <b>.</b> <b>5</b> <b>)</b> <b>-</b> hyp <b>2</b> <b>2</b> <b>.</b> <b>5</b> <b>)</b> <b>=</b>	$\sinh(2.5) - \cosh(\triangleright)$ $-0.08208499862$
$\cosh^{-1}45$ $= 4.499686191$	hyp <b>5</b> <b>4</b> <b>5</b> <b>=</b>	$\cosh^{-1}(45)$ $4.499686191$

**EX #24**
**MATHEMATICS MODE:**  Shift  SET-UP  1

Example 	Key in operation 	Display 
${}_{10}P_3 = 720$	<b>1</b> <b>0</b> Shift nPr <b>3</b> <b>=</b>	${}_{10}P_3$ $720$
${}^5C_2 = 10$	<b>5</b> Shift nCr <b>2</b> <b>=</b>	${}^5C_2$ $10$
$5! = 120$	<b>5</b> Shift x! <b>=</b>	$5!$ $120$

**EX #25**
**MATHEMATICS MODE:**  Shift  SET-UP  1

Example 	Key in operation 	Display 
Generate a random number between 0.000 & 0.999	Shift Rand <b>=</b>	Rand $\frac{139}{1000}$
Generate an integer from a range of 1 to 100	Alpha i-Rand <b>1</b> Shift <b>,</b> <b>1</b> <b>0</b> <b>0</b> <b>=</b>	$i\sim\text{Rand}(1,100)$ $33$

## EX #26

MATHEMATICS MODE:  Shift  SET-UP  1

Example 	Key in operation 	Display 
LCM(15, 27, 39) = 1755	Apps <input type="checkbox"/> 7 <input type="checkbox"/> 1 <input type="checkbox"/> 5 <input type="checkbox"/> Shift <input type="checkbox"/> ' <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> Shift ' <input type="checkbox"/> <input type="checkbox"/> 3 <input type="checkbox"/> 9 <input type="checkbox"/> =	LCM(15,27,39)  1755

LINE MODE:  Shift  SET-UP  2

Example 	Key in operation 	Display 
GCD(12, 24, 60) = 12	Apps <input type="checkbox"/> 8 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> Shift <input type="checkbox"/> ' <input type="checkbox"/> 2 <input type="checkbox"/> 4 <input type="checkbox"/> Shift ' <input type="checkbox"/> <input type="checkbox"/> 6 <input type="checkbox"/> 0 <input type="checkbox"/> =	GCD(12,24,60)  12




## EX #27

MATHEMATICS MODE:  Shift  SET-UP  1

Key in Operation 	Display 
<input type="checkbox"/> 9 <input type="checkbox"/> 9 <input type="checkbox"/> 9 <input type="checkbox"/> 9 <input type="checkbox"/> 9 <input type="checkbox"/> 9 <input type="checkbox"/> 9 <input type="checkbox"/> 9 <input type="checkbox"/> 9 <input type="checkbox"/> 9 <input type="checkbox"/> = Shift <input type="checkbox"/> PFact <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	9999999999 <sup>□</sup> ▲  3 <sup>2</sup> x11x41x271x(9▶)
<input type="checkbox"/> 1 <input type="checkbox"/> 7 <input type="checkbox"/> 7 <input type="checkbox"/> 7 <input type="checkbox"/> = <input type="checkbox"/> Shift <input type="checkbox"/> PFact <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1777 <sup>□</sup> ▲  (1777)




## EX #28

LINE MODE:  Shift  SET-UP  2

Example 	Key in operation 	Display 
$35 \div 10 = 3 \times 10 + 5$ Q=3 R=5	Apps <input type="checkbox"/> 5 <input type="checkbox"/> 3 <input type="checkbox"/> 5 Shift <input type="checkbox"/> , <input type="checkbox"/> 1 <input type="checkbox"/> 0 = <input type="checkbox"/>	Q...r(35, 10 Q= 3 R= 5
Quotient value (Q) + 3 = 6	+ <input type="checkbox"/> 3 <input type="checkbox"/> = <input type="checkbox"/>	Ans+3 6
Recall Quotient value (Q)	RCL <input type="checkbox"/> <sup>C</sup>	C 3
Recall Remainder value (r)	RCL <input type="checkbox"/> <sup>D</sup>	D 5

## EX #29

MATHEMATICS MODE:  Shift  SET-UP  1

Example 	Key in operation 	Display 
With rectangular coordinate (x=1, y= $\sqrt{3}$ ). Find Polar coordinate (r, $\theta$ ) at degree mode	Shift <input type="checkbox"/> Pol( <input type="checkbox"/> 1 <input type="checkbox"/> Shift , <input type="checkbox"/> $\sqrt{\square}$ <input type="checkbox"/> 3 <input type="checkbox"/> = <input type="checkbox"/>	Pol(1, $\sqrt{3}$ r=2, $\theta$ =60
	RCL <input type="checkbox"/> <sup>X</sup>	X 2
	RCL <input type="checkbox"/> <sup>Y</sup>	Y 60

## EX #30

LINE MODE: **2**

Example 	Key in operation 	Display 
With Polar coordinate ( $r=2$ , $\theta=60^\circ$ ). Find Rectangular coordinate (x, y) at degree mode	Shift Rec1 <b>2</b> Shift , <b>6</b> <b>0</b> <b>=</b>	Rec(2, 60 X= 1 Y= 1.732050808
	RCL	X 1
	RCL	Y 1.732050808

## EX #31

MATHEMATICS MODE: **1**

Example 	Key in operation 	Display 
$ \sin(60 - 5) \times (-\pi) $	Abs sin <b>6</b> <b>0</b> <b>-</b> <b>5</b> <b>)</b> <b>X</b> <b>(</b> <b>(-)</b> Shift $\pi$ <b>)</b> <b>=</b>	$ \sin(60 - 5) \times (-\pi) $  2.573442045




## EX #32

LINE MODE: **2**




Example 	Key in operation 	Display 
$1 \div 200 = 5 \times 10^{-3}$	<b>1</b> <b><math>\div</math></b> <b>2</b> <b>0</b> <b>0</b> <b>=</b>	$1 \div 200$  $5 \times 10^{-3}$
	ENG ENG	$1 \div 200$  $5000 \times 10^{-6}$
	Shift $\leftarrow$ ENG 	$1 \div 200$  $5 \times 10^{-3}$

# EX #33

LINE MODE:  Shift  SET-UP  2

Example 	Key in operation 	Display 
$\frac{2}{3} + 2 = \frac{8}{3} = 2.666666667$	<input type="checkbox"/> 2 <input type="checkbox"/> $\frac{\square}{\square}$ <input type="checkbox"/> 3 <input type="checkbox"/> +	2_3+2
	<input type="checkbox"/> 2 <input type="checkbox"/> =	8_3
	<input type="checkbox"/> F→D	2_3+2 2.666666667

MATHEMATICS MODE:  Shift  SET-UP  1

Example 	Key in operation 	Display 
$\frac{2}{3} + 2 = \frac{8}{3} = 2.666666667$	<input type="checkbox"/> 2 <input type="checkbox"/> $\frac{\square}{\square}$ <input type="checkbox"/> 3 <input type="checkbox"/> $\rightarrow$ <input type="checkbox"/> +	$\frac{2}{3} + 2$
	<input type="checkbox"/> 2 <input type="checkbox"/> =	$\frac{8}{3}$
	<input type="checkbox"/> F→D	$\frac{2}{3} + 2$ 2.666666667
$\tan 30 = \frac{\sqrt{3}}{3}$ =0.5773502692	<input type="checkbox"/> tan <input type="checkbox"/> 3 <input type="checkbox"/> 0 <input type="checkbox"/> =	tan(30)
	<input type="checkbox"/> F→D	tan(30) 0.5773502692
$\pi \div 8 = \frac{1}{8}\pi$ =0.3926990817	<input type="checkbox"/> Shift <input type="checkbox"/> $\pi$ <input type="checkbox"/> $\div$ <input type="checkbox"/> 8 <input type="checkbox"/> =	$\pi \div 8$
	<input type="checkbox"/> F→D	$\pi \div 8$ 0.3926990817



## EX #34

MATHEMATICS MODE: **1**

Example 	Key in operation 	Display 
$3+4i =$ $5 \angle 53.13010235$	<b>3</b> <b>+</b> <b>4</b> <b>1</b> <b>=</b>	$3+4i \rightarrow r \angle \theta$ $5 \angle 53.13010235$
$\sqrt{2} \angle 45 = 1+i$	<b>2</b> <b>4</b> <b>2</b> <b>=</b>	$\sqrt{2} \angle 45 \rightarrow a+bi$ $1+i$

## EX #35

LINE MODE: **2**

Example 	Key in operation 	Display 
Absolute value ( $r$ ) and argument ( $\theta$ ) if complex number is $6+8i$	<b>Abs</b> <b>6</b> <b>+</b> <b>8</b> <b>)</b> <b>=</b>	Abs ( $6+8i$ )  10
	<b>DEL</b> <b>3</b> <b>=</b>	Arg ( $6+8i$ ) $53.13010235$




## EX #36

LINE MODE: **2**

Example 	Key in operation 	Display 
$3+4i$ is $3-4i$	<b>4</b> <b>3</b> <b>+</b> <b>4</b> <b>)</b> <b>=</b>	Conjg ( $3+4i$ )  3 $-4i$




## EX #37

**MATHEMATICS MODE:** Shift SET-UP 1

Example 	Key in operation 	Display 
Real and Imaginary values of a complex number is $23 \angle 54$	Apps <input type="checkbox"/> 5 2 3 <input type="checkbox"/> 5 4 ) =	Real( $23 \angle 54$ ) 13.5190608
	<input type="checkbox"/> DEL Apps <input type="checkbox"/> 6 =	Imag( $23 \angle 54$ ) 18.60739087





## EX #38

**MATHEMATICS MODE:** Shift SET-UP 1

Example 	Key in operation 	Display 
$10101011 + 1100 - 1001 \times 101 + 10 = 10100001$ (in Binary Mode)	BIN <input type="checkbox"/> 1 0 1 0 1 0 1 1 + 1 1 0 0 - 1 0 0 1 $\times$ 1 0 1 $\div$ 1 0 =	$10101011 + 1100 - 1 \rightarrow$ BIN 1010 0001
$645 + 321 - 23 \times 7 + 2 = 1064$ (in Octal Mode)	OCT <input type="checkbox"/> 6 4 5 + 3 2 1 - 2 3 $\times$ 7 $\div$ 2 =	$645 + 321 - 23 \times 7 + 2 \wedge$ OCT 00000001064
$(77A6C + D9) \times B + F = 57C87$ (in Hexadecimal Mode)	HEX <input type="checkbox"/> ( 7 7 <input type="checkbox"/> A 6 <input type="checkbox"/> C + <input type="checkbox"/> D 9 <input type="checkbox"/> ) $\times$ <input type="checkbox"/> B $\div$ <input type="checkbox"/> F =	$(77A6C + D9) \times B + F \wedge$ HEX 00057C87

## EX #39

**MATHEMATICS MODE:** Shift SET-UP 1

Example 	Key in operation 	Display 
$12345 + 101 = 12446$	1 2 3 4 5 + 1 0 1 =	$12345 + 101 \wedge$ DEC 12446
	HEX <input type="checkbox"/>	$12345 + 101 \wedge$ HEX 000309E
	BIN <input type="checkbox"/>	$12345 + 101 \wedge$  BIN 1001 1110
	OCT <input type="checkbox"/>	$12345 + 101 \wedge$ OCT 00000030236

# EX #40

MATHEMATICS MODE:  Shift  SET-UP  1

Example	Key in operation	Display
789ABC Xnor 147258	$\left[ \begin{array}{ccccc} 7 & 8 & 9 & \overset{A}{\square} & \overset{B}{\square} \\ & \overset{C}{\square} & \text{Apps} & 4 & 1 & 4 \\ 7 & 2 & 5 & 8 & = \end{array} \right.$	789ABCxnor147258 HEX FF93171B
Ans or 789ABC	$\left[ \begin{array}{ccccc} \text{Ans} & \text{Apps} & 2 & 7 & 8 \\ 9 & \overset{A}{\square} & \overset{B}{\square} & \overset{C}{\square} & = \end{array} \right.$	Ansor789ABC HEX FFFB9FBF
Neg 789ABC	$\left[ \begin{array}{ccccc} \text{Apps} & 6 & 7 & 8 & 9 \\ \overset{A}{\square} & \overset{B}{\square} & \overset{C}{\square} & = \end{array} \right.$	Neg(789ABC HEX FF876544




# EX #41

LINE MODE:  Shift  SET-UP  2

Key in operation	Display
MODE 3	1:SD 2:Lin 3:Quad 4:Log 5:e EXP 6:ab EXP 7:PWR 8:Inv
1 (SD)	
7 5 = 8 5 = 9 0 = 7 7 = 7 9 =	
CA Apps 4 1 =	$\sum x^2$ 33120
CA Apps 4 2 =	$\sum x$ 406
CA Apps 5 1 =	n 5
CA Apps 5 2 =	$\bar{x}$ 81.2
CA Apps 5 3 =	$x \ n$ $\sigma$ 5.528109984
CA Apps 5 4 =	$x \ n-1$ $\sigma$ 6.180614856




**EX #42**

LINE MODE: Shift SET-UP 2

Key in operation 	Display <span style="float: right;">12345 12345</span>
MODE 3	1:SD      2:Lin 3:Quad    4:Log 5:EXP    6:ab EXP 7:PWR    8:Inv
3 (Quad)	
1 8 = 3 5 = 4 0 = 2 1 = 1 9 = ∇ ▸ 3 8 = 5 4 = 5 9 = 4 0 = 3 8 =	
CA 3 0 Apps 8 6 =	30 $\hat{y}$ 48.69615715
CA 5 0 Apps 8 4 =	50 $\hat{x}_1$ 31.30538226
CA 5 0 Apps 8 5 =	50 $\hat{x}_2$ -167.1096731















**EX #43**

LINE MODE: Shift SET-UP 2

Key in operation 	Display <span style="float: right;">12345 12345</span>
MODE 3 1	
2 0 = 4 3 = 2 6 = 4 6 = 2 0 = 4 3 =	
CA 2 6 Apps 7 4 =	26 $\blacktriangleright$ t -0.6236095645
Apps 7 1 =	P(Ans) 0.26644


# EX #44

MATHEMATICS MODE: Shift SET-UP 1

Key in operation 	Display 12345 12345
<span>MODE</span> <span>5</span> <span>2</span> (3 unknowns)	  
<span>2</span> <span>=</span> <span>4</span> <span>=</span> <span>(-)</span> <span>4</span> <span>=</span> <span>2</span> <span>0</span> <span>=</span>	  
<span>2</span> <span>=</span> <span>(-)</span> <span>2</span> <span>=</span> <span>4</span> <span>=</span> <span>8</span> <span>=</span>	  
<span>5</span> <span>=</span> <span>(-)</span> <span>2</span> <span>=</span> <span>(-)</span> <span>2</span> <span>=</span> <span>2</span> <span>0</span> <span>=</span>	   
<span>=</span>	X= $\frac{11}{2}$
<span>=</span>	Y= $3$
<span>=</span>	Z= $\frac{3}{4}$


# EX #45

MATHEMATICS MODE:  Shift  SET-UP  1

Key in operation 	Display 12345 12345
MODE 5 $\nabla$ 2 (Cubic equation)	a b c 0 0 0 0
5 = 2 = (-) 2 = 1 =	1 b 2 c -2 d 1
=	X <sub>1</sub> = -1
=	X <sub>2</sub> = $\frac{3}{10} + 0.331662479i$
=	X <sub>3</sub> = $\frac{3}{10} - 0.331662479i$


# EX #46

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
MODE 1 (COMP MODE)	0
Alpha X Alpha = ( 1 $\frac{\square}{\square}$ 3 ) Shift $\pi$ Alpha B $x^2$ Alpha C	X=(1_3) $\pi$ B <sup>2</sup> C 0
Shift Solve	B? 0
5 = (radius is B=5cm)	C? 0
2 0 = (height is C=2cm)	Solve for X 0
= (Calculate with new variables)	X=(1_3) $\pi$ B <sup>2</sup> C X= 523.5987756 L-R = 0


## EX #47

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
MODE <input type="checkbox"/> 1 (COMP MODE)	0
Alpha <input type="checkbox"/> Y Alpha <input type="checkbox"/> = <input type="checkbox"/> 5 Alpha <input type="checkbox"/> X <input type="checkbox"/> x <sup>2</sup>	$Y=5X^2-X+1$
<input type="checkbox"/> - <input type="checkbox"/> 2 Alpha <input type="checkbox"/> X <input type="checkbox"/> + <input type="checkbox"/> 1	0
CALC <input type="checkbox"/> 5 <input type="checkbox"/> =	$Y=5X^2-X+1$ 116
CALC <input type="checkbox"/> 7 <input type="checkbox"/> =	$Y=5X^2-X+1$ 232


## EX #48

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
MODE <input type="checkbox"/> 1 (COMP MODE)	0
Shift <input type="checkbox"/> $\frac{d}{dx}$ <input type="checkbox"/> sin <input type="checkbox"/> ( <input type="checkbox"/> 3 Alpha <input type="checkbox"/> X	$d/dx(\sin(3X+30))\triangleright$
<input type="checkbox"/> + <input type="checkbox"/> 3 <input type="checkbox"/> 0 <input type="checkbox"/> ) Shift <input type="checkbox"/> ' <input type="checkbox"/> 1	
EXP <input type="checkbox"/> (-) <input type="checkbox"/> 8 <input type="checkbox"/> ) <input type="checkbox"/> =	0.04534498409


## EX #49

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
MODE <input type="checkbox"/> 1	0
<input type="checkbox"/> $\int_0^x$ <input type="checkbox"/> 5 Alpha <input type="checkbox"/> X <input type="checkbox"/> x <sup>4</sup> <input type="checkbox"/> 4 <input type="checkbox"/> )	
<input type="checkbox"/> + <input type="checkbox"/> 3 Alpha <input type="checkbox"/> X <input type="checkbox"/> x <sup>2</sup> <input type="checkbox"/> + <input type="checkbox"/> 2	$\int(5X^4+3X^2+2X)$
Alpha <input type="checkbox"/> X <input type="checkbox"/> + <input type="checkbox"/> 1 Shift <input type="checkbox"/> ' <input type="checkbox"/> 2	236
Shift <input type="checkbox"/> ' <input type="checkbox"/> 3 Shift <input type="checkbox"/> ' <input type="checkbox"/> 4 <input type="checkbox"/> ) <input type="checkbox"/> =	

# EX #50


LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
MODE 7 1 <input type="radio"/> 2	MatA: 3x3 $\begin{bmatrix} \blacksquare & \blacksquare & \blacksquare \\ \blacksquare & \blacksquare & \blacksquare \\ \blacksquare & \blacksquare & \blacksquare \end{bmatrix}$
1 = 2 = 3 = 4 = 5 = 6 = 7 = 8 = 9 =	MatA: 3x3 $\begin{bmatrix} \blacksquare & \blacksquare & \blacksquare \\ \blacksquare & \blacksquare & \blacksquare \\ \blacksquare & \blacksquare & \blacksquare \end{bmatrix}$
CA Apps 1 2 <input type="radio"/> 2	MatB: 3x3 $\begin{bmatrix} \blacksquare & \blacksquare & \blacksquare \\ \blacksquare & \blacksquare & \blacksquare \\ \blacksquare & \blacksquare & \blacksquare \end{bmatrix}$
9 = 8 = 7 = 6 = 5 = 4 = 3 = 2 = 1 =	MatB: 3x3 $\begin{bmatrix} \blacksquare & \blacksquare & \blacksquare \\ \blacksquare & \blacksquare & \blacksquare \\ \blacksquare & \blacksquare & \blacksquare \end{bmatrix}$
CA Apps 3 X	MatA: 1 0
Apps 4 =	MatAns: 3x3 $\begin{bmatrix} \blacksquare & 24 & 18 \\ \blacksquare & 69 & 54 \\ \blacksquare & 114 & 90 \\ \blacksquare & & 30 \end{bmatrix}$




## EX #51

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 3 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3	MatC: 2x2 $\begin{bmatrix} \blacksquare & \blacksquare \\ 0 & 0 \end{bmatrix}$ 0
<input type="checkbox"/> 3 <input type="checkbox"/> = <input type="checkbox"/> (-) <input type="checkbox"/> 2 <input type="checkbox"/> = <input type="checkbox"/> (-) <input type="checkbox"/> 1 <input type="checkbox"/> = <input type="checkbox"/> 5 <input type="checkbox"/> =	MatC: 2x2 $\begin{bmatrix} \blacksquare & -2 \\ -1 & \blacksquare \end{bmatrix}$ 5
CA <input type="checkbox"/> Apps <input type="checkbox"/> 5 <input type="checkbox"/> x <input type="checkbox"/> 2 <input type="checkbox"/> =	MatAns: 2x2 $\begin{bmatrix} \blacksquare & -4 \\ -2 & 10 \end{bmatrix}$ 6

## EX #52

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2	MatA: 3x3 $\begin{bmatrix} \blacksquare & \blacksquare & \blacksquare \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ 0
<input type="checkbox"/> 1 <input type="checkbox"/> 0 <input type="checkbox"/> = <input type="checkbox"/> (-) <input type="checkbox"/> 5 <input type="checkbox"/> = <input type="checkbox"/> 3 <input type="checkbox"/> = <input type="checkbox"/> (-) <input type="checkbox"/> 4 <input type="checkbox"/> = <input type="checkbox"/> 9 <input type="checkbox"/> = <input type="checkbox"/> 2 <input type="checkbox"/> = <input type="checkbox"/> 1 <input type="checkbox"/> = <input type="checkbox"/> 7 <input type="checkbox"/> = <input type="checkbox"/> (-) <input type="checkbox"/> 3 <input type="checkbox"/> =	MatA: 3x3 $\begin{bmatrix} \blacksquare & \blacksquare & \blacksquare \\ 10 & -5 & \blacksquare \\ -4 & 1 & \blacksquare \end{bmatrix}$ -3
CA <input type="checkbox"/> Apps <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1	Det(  0
Apps <input type="checkbox"/> 3 <input type="checkbox"/> ) <input type="checkbox"/> =	Det(MatA) -471

## EX #53

LINE MODE: **2**

Key in operation 	Display 
<b>1</b> <b>2</b> <b>3</b>	MatB: 3x2 $\begin{bmatrix} 0 & 0 \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$ 0
<b>9</b> <b>=</b> <b>5</b> <b>=</b> <b>6</b> <b>=</b> <b>2</b> <b>=</b> <b>8</b> <b>=</b> <b>4</b> <b>=</b>	MatB: 3x2 $\begin{bmatrix} 0 & 5 \\ 0 & 5 \\ 0 & 5 \end{bmatrix}$ 4
<b>2</b>	Trn $\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$ 0
<b>4</b> <b>)</b> <b>=</b>	MatANS: 2x3 $\begin{bmatrix} 5 & 6 \\ 5 & 6 \end{bmatrix}$ 8 4 9


## EX #54

LINE MODE: **2**

Key in operation 	Display 
<b>3</b>	Ide $\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$ 0
<b>2</b> <b>)</b> <b>=</b>	MatANS: 2x2 $\begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix}$ 1


## EX #55

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3	MatA: 2x2 [ <input type="checkbox"/> 0 0 ] 0
2 = 3 = 4 = 5 =	MatA: 2x2 [ 2 <input type="checkbox"/> ] 5
CA <input type="checkbox"/> Apps <input type="checkbox"/> <input type="checkbox"/> 4	Adj(I) 0
Apps <input type="checkbox"/> 3 ) =	MatAns: 2x2 [ <input type="checkbox"/> -4 -3 ] 5


## EX #56

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 3 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3	MatC: 2x2 [ <input type="checkbox"/> 0 0 ] 0
8 = 2 = 3 = 6 =	MatC: 2x2 [ 8 <input type="checkbox"/> ] 6
CA <input type="checkbox"/> Apps <input type="checkbox"/> <input type="checkbox"/> 5	Inv(I) 0
Apps <input type="checkbox"/> 5 ) =	MatAns: 2x2 [ 0.047 0.1904 ] [-0.071 0.1904] 1.7


# EX #57

LINE MODE: Shift SET-UP 2

Key in operation 	Display 12345 12345
CA Abs	Abs(1) 0
Apps 7 ) =	MatAns: 2x2 [0.0476 0.0714] [0.0714 0.1904] 1.7


# EX #58

LINE MODE: Shift SET-UP 2

Key in operation 	Display 12345 12345
MODE 8 1 2	VctA: 2 [ ] 0
8 = 5 =	VctA: 2 [ 8 ] 5
CA Apps 1 2 2	VctB: 2 [ ] 0
7 = 3 =	VctB: 2 [ 1 ] 3
CA Apps 3 -	VctA: 1 0
Apps 4 =	VctAns: 2 [ ] 1


## EX #59

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 3 1	VctC: 3 [ ] 0 01 0
4 = 5 = (-) 6 =	VctC: 3 [ ] 4 5 [ ] -F1 -6
CA <input type="checkbox"/> Apps <input type="checkbox"/> 5 X 5 =	VctANS: 3 [ ] -F1 25 -301 20



## EX #60

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 1 1	VctA: 3 [ ] 0 01 0
4 = 5 = (-) 6 =	VctA: 3 [ ] 4 5 [ ] -F1 -6
CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 2 1	VctB: 3 [ ] 0 01 0
(-) 7 = 8 = 9 =	VctB: 3 [ ] -1 8 [ ] -F1 9
CA <input type="checkbox"/> Apps <input type="checkbox"/> 3	VctA: 3 [ ] 0 01 0
Apps <input type="checkbox"/> 8	VctA: 3 [ ] 0 01 0
Apps <input type="checkbox"/> 4 =	VctA-VctB -42



## EX #61

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 
<input type="checkbox"/> CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 <input type="checkbox"/> 1 <input type="checkbox"/> 1	VctA:3 [ ] 0 0] 0
<input type="checkbox"/> 4 <input type="checkbox"/> = <input type="checkbox"/> 5 <input type="checkbox"/> = <input type="checkbox"/> (-) <input type="checkbox"/> 6 <input type="checkbox"/> =	VctA:3 [ 4 5 [ ] -F] -6
<input type="checkbox"/> CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 1	VctB:3 [ ] 0 0] 0
<input type="checkbox"/> (-) <input type="checkbox"/> 7 <input type="checkbox"/> = <input type="checkbox"/> 8 <input type="checkbox"/> = <input type="checkbox"/> 9 <input type="checkbox"/> =	VctB:3 [ -1 8 [ ] -F] 9
<input type="checkbox"/> CA <input type="checkbox"/> Apps <input type="checkbox"/> 3 <input type="checkbox"/> X	UctA>1 0
<input type="checkbox"/> Apps <input type="checkbox"/> 4 <input type="checkbox"/> =	VctAns:3 [ ] -F] 6 6] 93


## EX #62

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 
<input type="checkbox"/> CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 <input type="checkbox"/> 3 <input type="checkbox"/> 1	VctA:3 [ ] 0 0] 0
<input type="checkbox"/> 4 <input type="checkbox"/> = <input type="checkbox"/> 5 <input type="checkbox"/> = <input type="checkbox"/> (-) <input type="checkbox"/> 6 <input type="checkbox"/> =	VctA:3 [ 4 5 [ ] -F] -6
<input type="checkbox"/> CA <input type="checkbox"/> Abs <input type="checkbox"/> Apps <input type="checkbox"/> 5 <input type="checkbox"/> ) <input type="checkbox"/> =	Abs(UctC) 8.774964387

# EX #63

LINE MODE:  Shift  SET-UP  2

Key in operation 	Display 12345 12345
CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 <input type="checkbox"/> 1 <input type="checkbox"/> 1	VctA:3 [ ] r 0 0] 0
(-) <input type="checkbox"/> 1 <input type="checkbox"/> = <input type="checkbox"/> 0 <input type="checkbox"/> = <input type="checkbox"/> 1 <input type="checkbox"/> =	VctA:3 [ -1 0 [ ] ] 1
CA <input type="checkbox"/> Apps <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 1	VctB:3 [ ] r 0 0] 0
1 <input type="checkbox"/> = <input type="checkbox"/> 2 <input type="checkbox"/> = <input type="checkbox"/> 0 <input type="checkbox"/> =	VctB:3 [ 1 2 [ ] ] 0
CA <input type="checkbox"/> Apps <input type="checkbox"/> 3 <input type="checkbox"/> Apps <input type="checkbox"/> 8 <input type="checkbox"/> Apps <input type="checkbox"/> 4 =	VctA-VctB -1
$\div$ <input type="checkbox"/> ( <input type="checkbox"/> Abs <input type="checkbox"/> Apps <input type="checkbox"/> 3 <input type="checkbox"/> ) <input type="checkbox"/> $\times$ Abs <input type="checkbox"/> Apps <input type="checkbox"/> 4 <input type="checkbox"/> ) =	Ans $\div$ (Abs(VctA) $\times$ $\blacktriangleright$ -0.316227766
Shift <input type="checkbox"/> cos <sup>-1</sup> <input type="checkbox"/> Ans <input type="checkbox"/> ) = <input type="checkbox"/> Apps <input type="checkbox"/> 3 $\times$ <input type="checkbox"/> Apps <input type="checkbox"/> 4 =	VctANS:3 [ -2 1 -2] -2
Abs <input type="checkbox"/> Apps <input type="checkbox"/> 7 <input type="checkbox"/> ) = <input type="checkbox"/> Apps <input type="checkbox"/> 7 $\div$ <input type="checkbox"/> Ans =	VctANS:3 [ 0.3333 -0.666] -2.3

# EX #64

MATHEMATICS MODE:  Shift  SET-UP  1

Key in operation	Display								
MODE 6	f(x)=								
Alpha X Shift x <sup>2</sup> + 3 Alpha X x <sup>2</sup> - 2 Alpha X	f(x)= X <sup>3</sup> +3X <sup>2</sup> -2X								
= = = =	<table border="1"> <tr> <td>X</td> <td>F(X)</td> </tr> <tr> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>16</td> </tr> <tr> <td>3</td> <td>48</td> </tr> </table> <p style="text-align: right;">1</p>	X	F(X)	1	1	2	16	3	48
X	F(X)								
1	1								
2	16								
3	48								
⏴ ⏴ ⏴ ⏴	<table border="1"> <tr> <td>X</td> <td>F(X)</td> </tr> <tr> <td>4</td> <td>48</td> </tr> <tr> <td>5</td> <td>104</td> </tr> <tr> <td>6</td> <td>190</td> </tr> </table> <p style="text-align: right;">5</p>	X	F(X)	4	48	5	104	6	190
X	F(X)								
4	48								
5	104								
6	190								